



**Washington State  
Department of Transportation**

## **Instructional Letter**

Number: IL 4019.01

/s/ Brian Ziegler

State Design Engineer

Effective Date: July 3, 2000

Expires: July 3, 2001

## **Roundabouts**

### **I. Introduction**

#### **A. Purpose**

To establish rules and procedures for the Washington State Department of Transportation (WSDOT) on the design of modern roundabouts.

#### **B. Background**

Modern roundabouts are circular intersections at grade that can be an effective intersection type with lower speeds, and easier decision making than traditional intersections, and they also require less maintenance. Roundabouts have been successfully implemented in Europe and Australia. Until recently, they have been slow to gain support in the United States. This lack of acceptance is generally a result of the negative experience with rotaries and traffic circles built in the earlier half of the twentieth century. Safety and operational problems caused traffic circles to lose favor.

Modern roundabouts differ from the old rotaries and traffic circles in three important respects: they have a smaller diameter that lowers speeds; they have splitter islands that provide entry constraints, slowing down the entering speeds; and they have yield at entry. Several roundabouts have been built in Washington State recently and more are proposed as intersection improvements.

#### **C. Supersession**

This instructional letter supersedes Instructional Letter IL 4019.00, *Roundabouts*, dated June 1, 1999.

#### **D. Effective Date And Term**

These rules and procedures are effective on the date of this letter and will be replaced by a chapter in the *Design Manual*, M 22-01, within one year of the effective date.

## **II. Rules**

### **A. Justification, Approval, and Documentation**

Justification, Approval, and Documentation requirements for roundabouts are given in the attached Appendix. The appendix has been written in the format of a *Design Manual* chapter.

### **B. Design of Single-Lane Roundabouts**

Design single-lane roundabouts as provided in the attached Appendix.

### **C. Design of Two-Lane Roundabouts**

Design two-lane roundabouts as provided in *Roundabouts: An Informational Guide*, FHWA-RD-00-067, USDOT, FHWA.

## **III. Appendix**

### Roundabouts

***Alternate Formats:*** Persons with disabilities may request this information be prepared and supplied in alternate forms by calling collect (360) 664-9009. Deaf and hearing impaired people may call 1-800-838-6388 (TTY relay service).

**Appendix****915****Roundabouts**

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- 915.01 General
- 915.02 References
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**915.01 General**

Modern roundabouts are circular intersections at grade. They can be an effective intersection type with fewer conflict points, lower speeds, and easier decision making than traditional intersections. They also require less maintenance. When well designed, they have been found to reduce injury accidents, traffic delays, fuel consumption, and air pollution. They also can have a traffic calming effect.

Modern roundabouts differ from the old rotaries and traffic circles in three important respects: they have a smaller diameter that constrains circulating speeds; they have splitter islands that provide entry deflection, slowing down the entering vehicles; and they have yield at entry.

Consider roundabouts at intersections:

- Where stop signs result in unacceptable delays for the crossroad traffic. Roundabouts reduce the delays for the crossroad, but increase the delays for the through roadway.
- With a high left-turn percentage.
- With more than four legs.
- Where a disproportionately high number of accidents involve crossing or turning traffic.
- Where the major traffic movement makes a turn.
- Where traffic growth is expected to be high and future traffic patterns are uncertain.
- Where it is not desirable to give priority to either roadway.
- Where major roads intersect at a wye (Y) or tee (T) intersection or with unusual geometry.

Do not build roundabouts:

- Where a satisfactory geometric design cannot be provided.
- Where peak period reversible lanes are required.
- At a single intersection in a network of linked traffic signals.
- Where a signal interconnect system would provide a better level of service.
- Where it is desirable to be able to modify traffic movements via signal timings.
- Where a downstream traffic control device could cause a queue that extends into the roundabout. Examples include traffic signals, signalized pedestrian crossings, railroad crossings, and drawbridges.

Roundabouts are not highly recommended, but they may be considered at intersections:

- On a facility with a functional class of collector or above where any leg has a posted speed greater than 40 mph.
- Where traffic flows are unbalanced with high volumes on one or more approaches.
- Where a major road intersects a minor road and a roundabout would result in unacceptable delays to the major road traffic.
- Where there is considerable pedestrian activity and, due to high traffic volumes, it would be difficult for pedestrians to cross either road. This includes special-need pedestrians such as large numbers of children or elderly.
- Where there is inadequate sight distance.
- Where there is considerable bicycle traffic.

## 915.02 References

*Americans with Disabilities Act of 1990 (ADA)*

*Standard Plans for Road, Bridge, and Municipal Construction*  
(Standard Plans), M 21-01, WSDOT

*Manual on Uniform Traffic Control Devices for Streets and Highways*  
(MUTCD), USDOT, FHWA; including the *Washington State*  
*Modifications to the MUTCD*, M 24-01, WSDOT

*Local Agency Guidelines (LAG)*, M 36-63, WSDOT

*Roundabouts: An Informational Guide*, FHWA-RD-00-067, USDOT,  
FHWA

*A Policy on Geometric Design of Highways and Streets* (Green Book), AASHTO

*Use of Roundabouts*, ITE Technical Council Committee 5B-17 (Feb. 1992)

*NCHRP Synthesis 264, Modern Roundabout Practice in the United States*, Transportation Research Board, 1998.

*Guide to Traffic Engineering Practice, Part 6-Roundabouts*, Austroad (1993)

*Roundabout Design Guidelines*; Ourston & Doctors, Santa Barbara, California (1995)

*The Design of Roundabouts. State of the Art Review*; Brown, Mike; Transportation Research Laboratory, Department of Transport. London, HMSO, 1995.

*ARCADY* (Assessment of Roundabout CAPacity and DelaY) program, developed by MVA Systematica under contract to Transport Road Research Laboratory (TRRL).

*RODEL* (ROundabout DELay) program, developed by the Highway Department of Staffordshire County Council in the UK.

*SIDRA* (Signalized Intersection Design and Research Aid) program, developed by The Australian Road Research Board (ARRB).

### 915.03 Definitions

***approach roadway*** The lane or set of lanes for traffic approaching the roundabout. (See Figure 915-1.)

***central island*** The area of the roundabout surrounded by the circulating roadway.

***central island diameter*** The diameter of the central island. (See Figure 915-1.)

***circulating lane*** A lane circulating in the roundabout.

***circulating roadway*** The area within the inscribed circle for vehicular movement through the roundabout.

***circulating width*** The width of the circulating roadway measured from inscribed circle to the central island. (See Figure 915-1.)

***conflict*** An event involving two or more road users in which the action of one user causes the other user to make an evasive maneuver to avoid a collision.

***curb bulb*** A bulge in a curb line that reduces the width of the roadway.

**deflection** The change in vehicle path to curve around the central island resulting in a slowing of vehicles through the roundabout. (See Figure 915-3.)

**departure roadway** The lane or set of lanes for traffic leaving the roundabout. (See Figure 915-1.)

**design speed** The maximum safe speed that can be maintained over a section of highway when the design features of the highway govern.

**design vehicle** A vehicle, the dimensions and operating characteristics of which are used to establish the layout geometry.

**entry angle** The angle between the entry roadway and the circulating roadway measured at the yield point.

**entry curve** The curve of the right curb that leads vehicles into the circulating roadway. (See Figure 915-1.)

**entry width** The width of an entrance leg at the inscribed circle. (See Figure 915-1.)

**exit curve** The curve of the right curb that leads vehicles out of the circulating roadway. (See Figure 915-1.)

**exit width** The width of an exit leg at the inscribed circle. (See Figure 915-1.)

**flare** The widening of the approach to the roundabout to increase capacity. (See Figure 915-1.)

**functional classification** The grouping of streets and highways according to the character of the service they are intended to provide as provided in RCW 47.05.021.

**inscribed circle** The entire area within a roundabout between all of the approaches and exits. The inscribed circle may not always be circular; ovals and tear drops have been used.

**inscribed circle diameter** The diameter of the inscribed circle. (See Figure 915-1.)

**intersection angle** The angle between any two intersection legs at the point that the center lines intersect.

**intersection at grade** The general area where a state highway or ramp terminal is met or crossed at a common grade or elevation by another state highway; a federal, county, or private road; or a city street

**intersection leg** Any one of the roadways radiating from and forming part of an intersection.

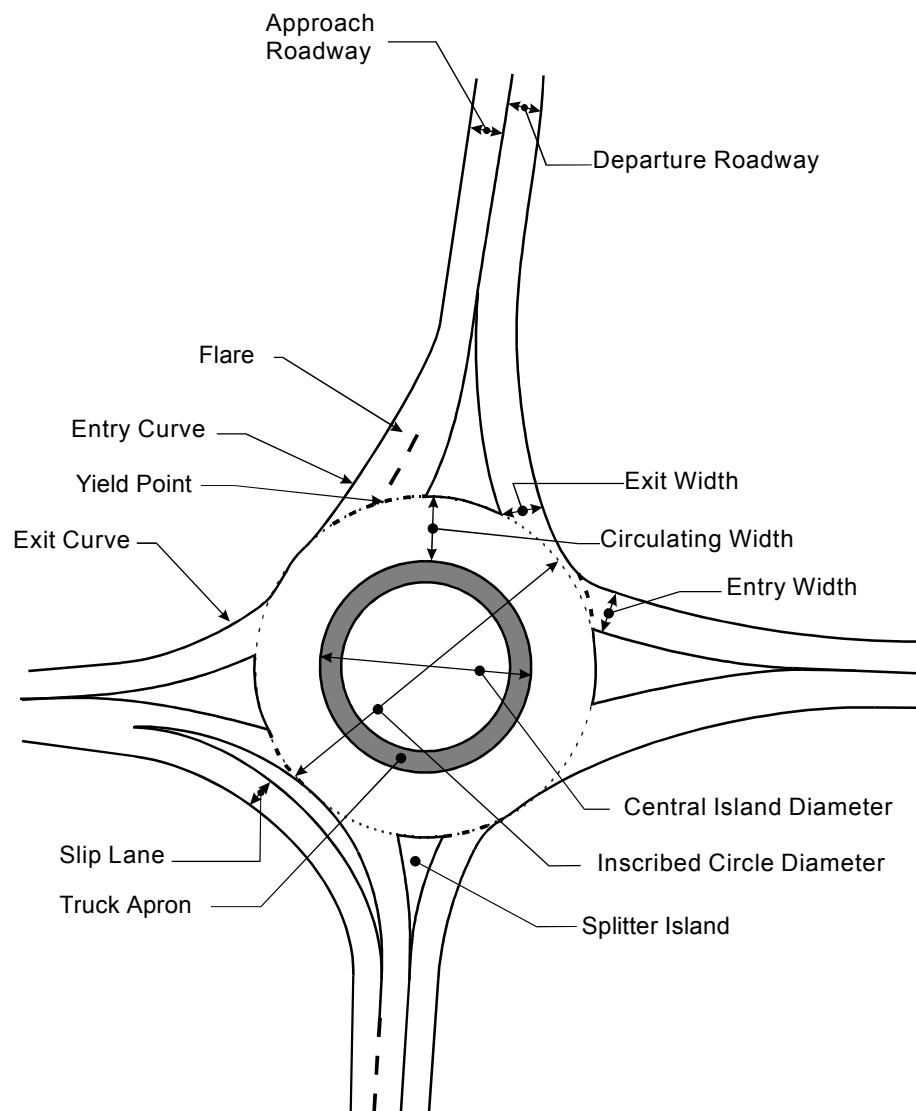
**intersection sight distance** The distance that a vehicle on the crossroad can see along the main roadway, as compared to the distance required for safe operation.

**intersection turning radii** The geometric design of the intersection to allow the design vehicle for each turning movement to complete the turn without encroachment.

**island** A defined area within an intersection, between traffic lanes, for the separation of vehicle movements or for pedestrian refuge.

**lane** A strip of roadway used by a single line of vehicles.

**lane width** The lateral design width for a single lane, striped as shown in the Standard Plans and the Standard Specifications. The



**Roundabout Elements**

**Figure 915-1**

width of an existing lane is measured from the edge of traveled way to the center of the lane line or between the centers of successive lane lines.

***multilane roundabout*** A roundabout with the circulating roadway and one or more entry or exit lanes designed as two or more lanes.

***roadway*** The portion of a highway, including shoulders, for vehicular use. A divided highway has two or more roadways.

***roundabout*** A circular intersection at which all traffic moves counterclockwise around a central island.

***sight distance*** The length of highway visible to the driver.

***single-lane roundabout*** A roundabout with the circulating roadway and all entry and exit lanes designed as single lanes.

***shoulder*** The portion of the roadway contiguous with the traveled way, primarily for accommodation of stopped vehicles, emergency use, lateral support of the traveled way, and use by pedestrians and bicycles.

***slip lane*** A lane that separates heavy right turn movements from the roundabout circulating traffic. (See Figure 915-1.)

***splitter island*** The raised island at each two-way leg between the entering vehicles from the exiting vehicles, designed primarily to deflect entering traffic. (See Figure 915-1.)

***stopping sight distance*** The sight distance required to detect a hazard and safely stop a vehicle traveling at design speed.

***superelevation*** The rotation of the roadway cross section in such a manner as to overcome part of the centrifugal force that acts on a vehicle traversing a curve.

***truck apron*** The optional outer, mountable portion of the central island of a roundabout between the raised, nontraversable area of the central island and the circulating roadway. (See Figure 915-1.)

***turning radius*** The radius that the outside front wheel of the design vehicle travels while making a turn.

***yield-at-entry*** The requirement that vehicles on all approaches yield to vehicles within the circulating roadway.

## 915.04 Capacity Analysis

A capacity analysis is required for each proposed roundabout to compare it to other types of intersection control.

There are two methods of performing the analysis:

- An empirical formula based on measurements at a saturated roundabout (the British method). Use the method given in Ourston & Doctors or Brown or use either the *ARCADY* computer program or the *RODEL* computer program to analyze a roundabout with this method.
- An analysis based on gap acceptance (the Australian method). Use the method given in the Austroad guide or the computer program *SIDRA* to analyze a roundabout with this method.

While each method has advantages, it is felt there is currently not enough United States performance data on which to base the empirical method analysis. Either method is currently acceptable for the analysis of a roundabout.

## **915.05 Geometric Design**

### **(1) Design Vehicle**

The physical characteristics of the design vehicle is one of the elements that control the geometric design of a roundabout. See Chapter 910 for guidance on the selection of a design vehicle. Use the largest vehicle selected for any leg as the design vehicle for the roundabout. For a roundabout on a state highway this is the WB-50 vehicle. Design a roundabout so that the design vehicle can use it with 2 ft shy from the turning radius to any curb. The rear wheel of a semitrailer may encroach on the truck apron.

It is desirable to design the circulating roadway so that a BUS design vehicle can use the roundabout without encroaching on the truck apron.

Design a roundabout on a state highway so the WB-67 can use it without leaving the truck apron or encroaching on a curb. Use vehicle turning path templates to verify that this vehicle can make all state highway to state highway movements.

The vehicle path through a roundabout will normally contain reverse or compound curves. To check the roundabout for the design vehicles, use a template generated for each path.

### **(2) Deflection and Design Speed**

For a roundabout to work properly it must be designed for restricted speeds. The most significant feature that will restrict the speed is adequate deflection. Vehicle deflection is controlled by entry and exit radii, and the size of the central island. The deflection is expressed as the radius of the center line of a 7 ft wide vehicle path passing through the roundabout. Figure 915-3 illustrates the deflection path.

The deflection path can be adjusted with the following features:

- Alignment of the entry and the shape, size, and position of the approach splitter island.
- The central island size.
- Staggered alignment between entrance and exit.

The deflection design speed is controlled by the path radius and cross slope of the roadway. Figure 915-2 gives the deflection radius for design speeds for roadways that slope to the outside of the curve (-2%), are level (0%), and that slope to the inside of the curve (2%).

Design roundabouts so that deflection limits the circulating speed to 25 mph or less. The circulating speed is also limited to not more than 15 mph below the highest posted speed on the approach roadways. Design roundabouts for a maximum speed of 15 to 20 mph in areas with a large number of pedestrians or bicyclists.

Design Speed (mph)	Design Radius		
	Cross Slope		
	-2%	0%	2%
10	20	20	20
15	50	50	45
20	110	100	95
25	200	185	170
30	335	300	275
35	515	455	410

**Roundabout Deflection Radius (ft)**

**Figure 915-2**

### **(3) Inscribed Diameter**

The inscribed diameter is controlled by the space available, the design speed, and the number of legs. The size of the inscribed diameter is a balance between designing for large vehicles and providing adequate deflection for the design speed. Select a diameter that will result in a speed at or below the desired design speed. The minimum inscribed diameter for roundabouts on a state highway is 115 ft and the maximum is 200 ft.

To meet the need to provide an adequate turning radius, the right-turn movement might require that the inscribed diameter be increased for roundabouts with more than four legs or a high skew angle. Make the turning radius 55 ft minimum with 2 ft shy.

The shape of the roundabout does not have to be round when the smaller radius is at least 65 ft. When a noncircular roundabout is used, where possible align it so that the heavier traffic uses the larger radius.

#### **(4) Entry**

Design roundabout entries for a design speed equal to or not more than 10 mph higher than the design speed of the roundabout. Use the deflection radii values in Figure 915-2 to determine the design speed at the entry.

Design the entry width to accommodate the design vehicles while providing adequate deflection. The minimum radius for the entry curve is 65 ft. Figure 915-4 provides additional guidance for entry design.

When the approach width, including shoulders and parking lanes, is wider than needed for the entry width, consider curb bulbs to reduce the width.

#### **(5) Circulating Roadway**

Keep the circulating width constant throughout the roundabout with the minimum width equal to or wider than the maximum entry width.

The relationship between the inscribed diameter and the minimum circulating width to provide for the design vehicles is given on Figure 915-5.

#### **(6) Exit**

Design roundabout exits for a design speed equal to the design speed of the entry. Higher speeds at the exits can increase the capacity, but the safety of pedestrians using the crosswalk will be reduced. Use the values in Figure 915-2 to determine the design speed at the exit.

Design the exit width to accommodate the design vehicles while providing adequate deflection. Figure 915-4 provides additional guidance for exit design.

#### **(7) Sight Distance**

The operator of a vehicle approaching a roundabout needs to have an unobstructed view of the splitter island, central island, yield point, and sufficient lengths of the intersecting roadways to permit recognition of the roundabout and to initiate the required maneuvers to maintain control of the vehicle and to avoid collisions. To do this, three aspects of the sight distance are considered:

- **Stopping Sight Distance.** Provide design stopping sight distance, as given in Chapter 650, at all points on the approach roadways, the circulating roadway, and the departure roadways.

- **Intersection Sight Distance.** For intersection sight distance at roundabouts, provide traffic at the yield point a clear view of traffic on the circulating roadway and approaching the roundabout on the leg to the left for a distance equal to that traveled in 5 seconds. Because traffic is not required to stop before entering a roundabout, it is desirable to provide the sight distance along the approach for 50 ft. Guidance for intersection sight distance at a roundabout is given in Figure 915-6.

## (8) Islands

Raised islands are important for effective operation of a roundabout. Their primary purpose is to control deflection.

- (a) **Central Island.** The central island is normally comprised of the truck apron and the raised, nontraversable area (Figure 915-7). The truck apron is the outer part of the central island, designed to allow for encroachment by the rear wheels of large trucks.

The primary control of the size is the inscribed diameter, the required circulating width, and the required deflection. When the required circulating width for the large vehicles results in a deflection radius larger than the maximum for the design speed, increase the central island diameter to achieve the desired deflection radius and provide a truck apron. Make the surfacing of the truck apron different from the circulating roadway. Use a 3 in mountable curb between the circulating roadway and the truck apron.

The raised, nontraversable area may be landscaped with plants that will not be a sight obstruction. Use a 6 in barrier curb between the truck apron and the nontraversable area.

- (b) **Splitter Island.** Splitter islands are built at each two-way leg. They serve to:

- Control the entry and exit speeds by controlling deflection
- Prevent wrong way movements
- Provide pedestrian refuge
- Provide a place to mount signs

The desirable length of a splitter island is equal to the stopping sight distance. (See Chapter 650.) Make the extensions of the curves that form the splitter islands tangent to the outside edge of the central island. The minimum width of the island at any crosswalk is 6.5 ft. Figure 915-4 gives guidance on the design of splitter islands.

For information on shy distances at islands, island nose radii, and other details, see Chapter 910.

### **(9) Grades and Superelevation**

It is preferred that the grade on all of the intersecting roadways at a roundabout is 4% or flatter and that the grades be constant or that the roundabout be in a sag vertical curve. When a roundabout must be built at or near the crest of a vertical curve on one of the roadways, pay special attention to the sight distances.

Do not use superelevation for the circulating roadway. Maintain the normal 2% cross slope from the central island to the outside of the circle. This will improve drainage and help reduce the speed of circulating traffic.

### **(10) Right-Turn Slip Lane**

Right-turn slip lanes are an added complication that can add to driver confusion at a roundabout. With justification they may be used when a right-turn movement is heavy enough to lead to a breakdown in roundabout operation. See Chapter 910 for additional information on channelization for right-turn slip lanes.

## **915.06 Pedestrian and Bicycles**

Pedestrian crossings are unique at roundabouts in that the pedestrian is required to cross at a point behind the vehicles entering the roundabout. The normal crossing point at intersections is in front of these vehicles. For this reason, mark all pedestrian crosswalks at roundabouts when pedestrian activity is anticipated. Position the crosswalk one car length, approximately 25 ft from the yield point and use the raised splitter island as a pedestrian refuge. Provide a barrier-free passageway, at least 6 ft wide, through this island for persons with disabilities.

The operating speed of vehicles within smaller roundabouts is, in most cases, the same speed as that of bicyclists and both can use the same roadway without conflict or special treatment. Larger roundabouts with higher operating speeds can present problems for the bike rider and alternate bike routing, marked bike lanes, or warning signs may be necessary. If the bike riders are children, as in the case of a nearby elementary school, consider signing and pavement markings directing them to use the adjacent sidewalk.

## **915.07 Signing and Pavement Marking**

Roundabouts, being a new concept in Washington State, require standardized signing and pavement markings to familiarize the motorist with their intended operation. Roundabout signing is shown in Figure 915-8 and pavement markings are shown in Figure 915-9. To

the extent possible, standard signs and pavement markings contained in the MUTCD are used. Advance warning signs depicting the roundabout with a symbol, are not acceptable. A diagrammatic guide sign, as shown in the figure, can be used to provide the driver with destination information.

## **915.08 Illumination**

Provide illumination for each of the conflict points between circulating and entering traffic in the roundabouts and at the beginning of the raised splitter islands. A single light source located in the central island cannot be easily maintained and is not acceptable. Use a standard high pressure sodium vapor luminaire with a medium or short cut-off light distribution for the light source. Position the luminaire over the outside edge of the roundabout to use the “house side” lighting to illuminate the pedestrian crosswalks. Use fixed base light standards when pedestrian activity is anticipated and the bases are located outside the Design Clear Zone. Figure 915-10 depicts the light standard placement for a four-approach roundabout.

## **915.09 Access, Parking, and Transit Facilities**

No road approach connections to the circulating roadway are allowed at roundabouts. It is preferred that road approaches not be allowed to the approach or departure legs within the length of the splitter island. The minimum distance from the circulating roadway to a road approach is controlled by the corner clearance using the circulating roadway as the crossroad. (See Chapter 920.)

Parking and bus stops are not allowed in the circulating roadway or on the approach roadway past the crosswalk. It is also desirable that no parking be allowed on the approach or departure legs for the length of the splitter island. Bus stops on departure legs must be located in a pullout or where the pavement is wide enough that a stopped bus will not block the through movement of traffic.

## **915.10 Procedures**

### **(1) Justification**

Consider roundabouts only when fulfilling one or more of the following justification categories:

- (a) **Safety Improvement** At high accident location intersections, a roundabout might be a method of reducing accidents by reducing the number of conflict points. At conventional intersections, many accidents involve left-turning or crossing vehicles; with roundabouts these movements are eliminated. With the low speeds and low impact angles, accidents at roundabouts are generally less severe.

Roundabouts in this category require an accident analysis that shows high accidents of a type that a roundabout can reduce in number or severity. In the analysis, consider any shift of accidents to another type.

- (b) **Improve Intersection Capacity** A roundabout may be analyzed as an alternative to stop signs or traffic signals to increase the capacity of an intersection. With traffic signals, alternating streams of traffic are permitted through the intersection, causing a loss of capacity to occur when the intersection clears between phases. In a roundabout, vehicles may enter available gaps simultaneously from multiple approaches. This can result in an advantage in capacity. This advantage becomes greater when the volume of left turning vehicles is high.

Justify roundabouts in this category with a capacity analysis showing that it can provide the required capacity at a level of service comparable to a conventional intersection.

- (c) **Queue Reduction** Roundabouts can improve operations at locations where the space for queuing is limited. Roadways are often widened for queuing at traffic signals, but the reduced delays and continuous flows at roundabouts allow the use of fewer lanes. Possible applications are at interchanges where left turn volumes are high. Roundabouts at ramp terminals can improve capacity without widening a structure.

Roundabouts in this category require an analysis showing that the roundabout will eliminate the need to build additional lanes or widen a structure.

- (d) **Special Conditions** The special conditions where a roundabout might be preferred over a conventional intersection include those with unusual geometrics, right of way limitations, closely spaced intersections, and wye (Y) intersections. Roundabouts might be better suited for intersections with unusual geometrics; such as high skew angle, offset legs, and 5 or more legs. Roundabouts can provide adequate levels of operation without significant realignment or complicated signing or signal phasing.

Roundabouts can avoid the need to obtain additional right of way along the intersection legs. Roundabouts can shift any required right of way from the roadway between the intersections to the area of the intersection.

Roundabouts can eliminate closely spaced intersections, and any associated operational problems, by combining them into a single intersection. The ability of roundabouts to serve high turning

volumes make them a practical design at wye (Y) or tee (T) intersections.

Roundabouts proposed for a special condition require documentation indicating what the condition is and how the roundabout will address it.

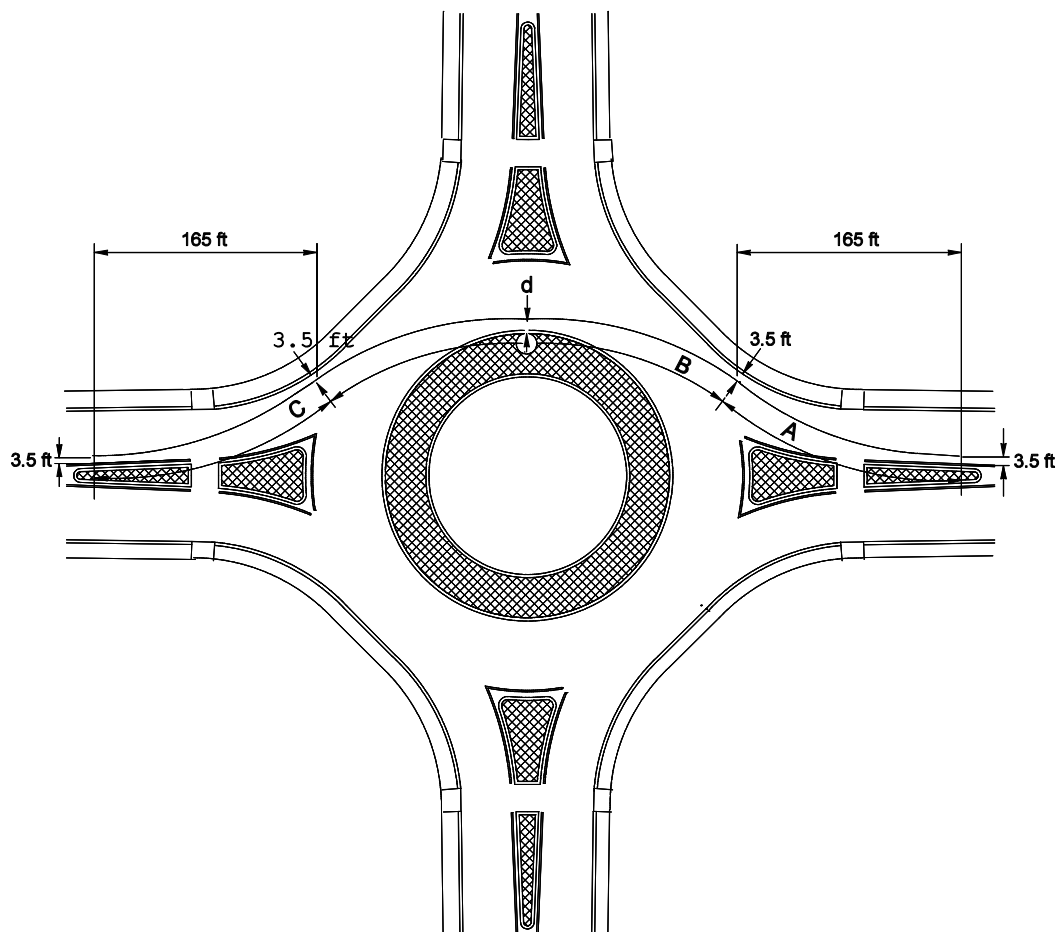
## (2) Approval

- (a) **Preliminary Approval.** The approval of the State Design Engineer or designee is required for roundabouts on any state highway, either NHS or Non-NHS, with a posted speed greater than 40 mph or for roundabouts within the limits of limited access control for a state highway. Prior to beginning the design process, submit the roundabout justification, 915.10 (1), to the Olympia Service Center (OSC) Design Office. Additional studies, such as a value engineering study (Chapter 315); alternatives, and justification may be required before preliminary approval is granted.
- (b) **Design Approval** OSC Design Office approval of the design is required when a roundabout is to be used on a state highway. Submit to the OSC Design Office:
- Advance engineering data.
  - An intersection plan.
  - Roundabout justification from 915.10 (1).
  - A comparison of the roundabout to conventional intersection alternatives with an explanation as to why the roundabout is the preferred alternative.
  - A traffic analysis of the roundabout and conventional intersection alternatives, including a discussion of any loss in level of service or increase in delay.
  - Preliminary approval for roundabouts on any state highway with a posted speed greater than 40 mph.
  - Preliminary approval for roundabouts within the limits of limited access control.

## 915.11 Documentation

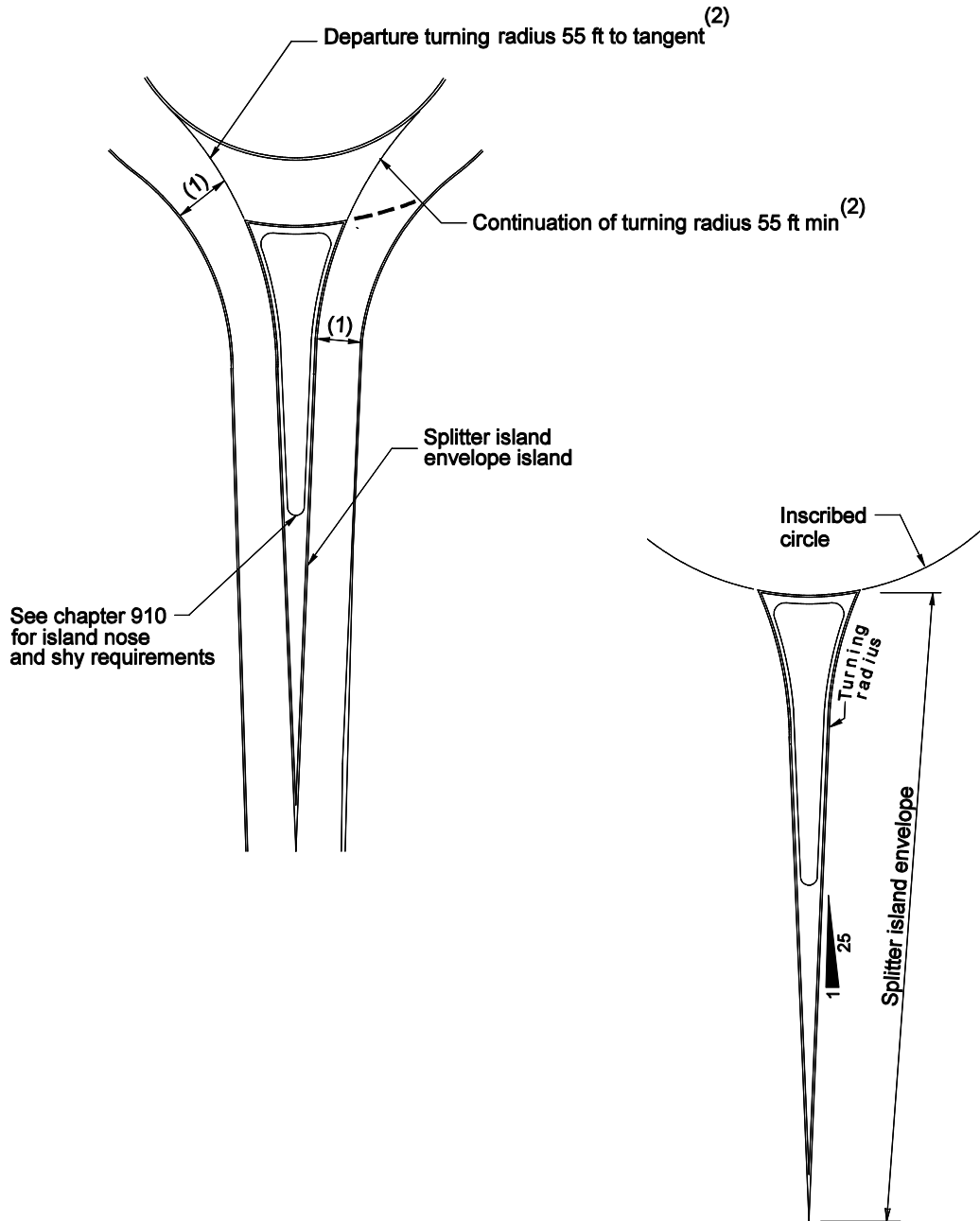
The following documents are to be preserved in the project file. See Chapter 330.

- ☐ Roundabout justification
- ☐ OSC Design Office approval
- ☐ Applicable intersection documentation from Chapter 910

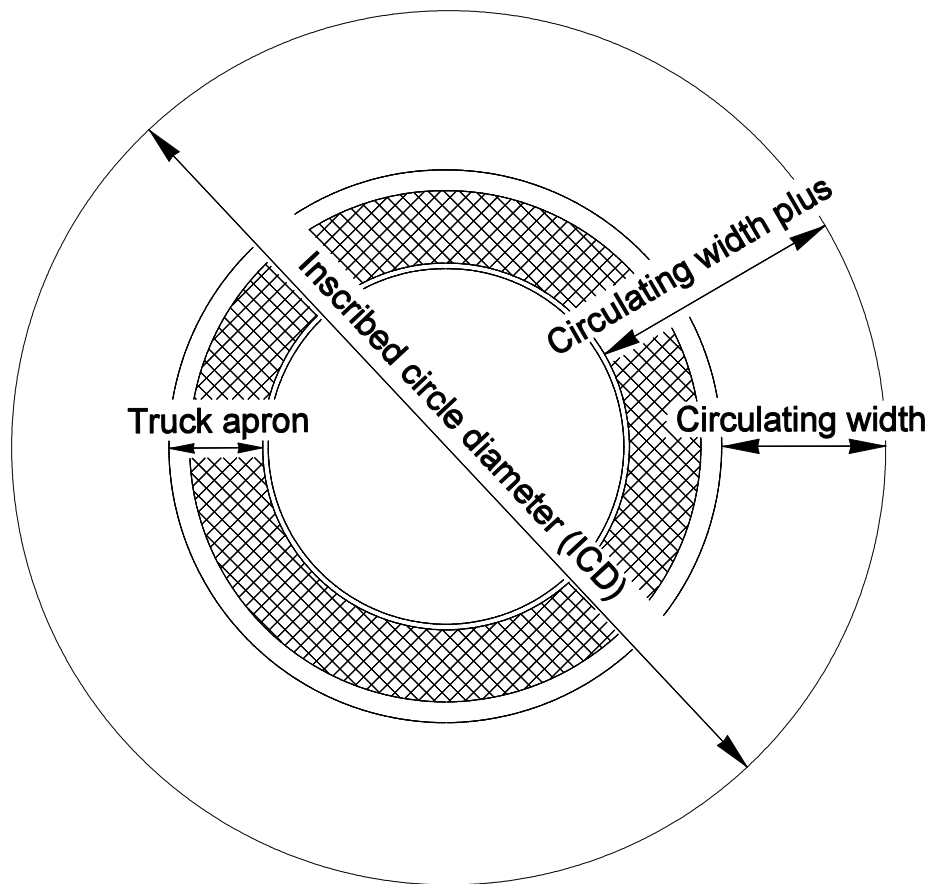


- A = Entry deflection
- B = Circulating Deflection
- C = Exit deflection
- d = 3.5 ft for single lane roundabouts  
8.5 ft for multilane roundabouts

**Deflection Path**  
**Figure 915-3**



**Roundabout Entry  
Figure 915-4**

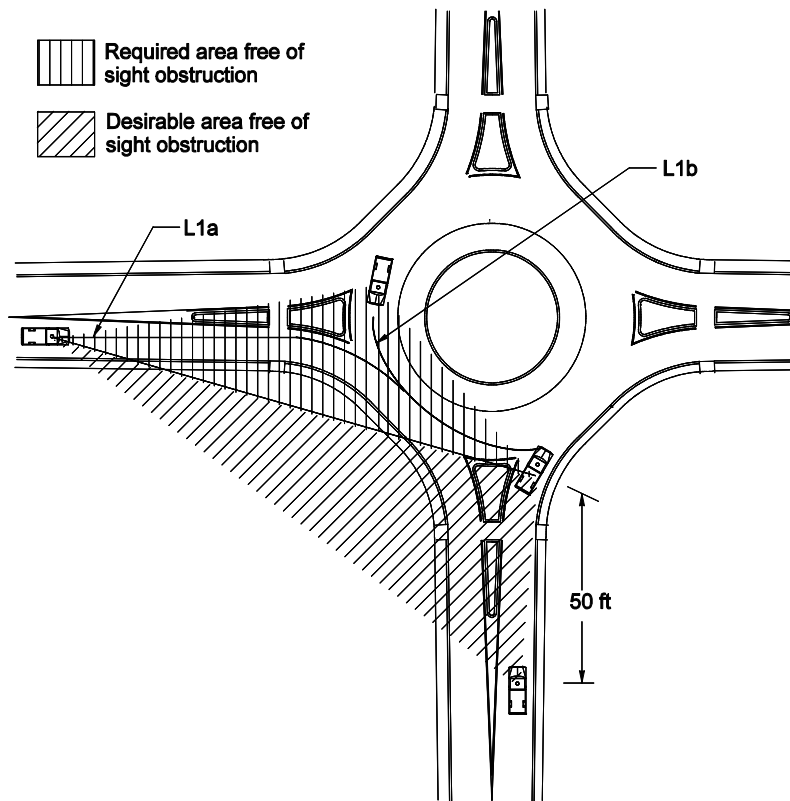


ICD	Design Vehicle						
	P	SU	BUS	A-BUS	WB-40	WB-50	WB-67*
115	12	16	18	19	21	25	41
125	11	15	17	18	20	24	36
150	11	15	16	17	18	21	29
175	11	14	16	16	17	20	26
200	11	14	15	16	17	19	23

**Minimum Width (ft)**

\* Note: The width for the WB-67 vehicle does not include shy, add 4 ft to the width for major truck routes

**Roundabout Roadway Width  
Figure 915-5**



Speed (mph)	L1 (ft)
15	115
20	150
25	185
30	225
35	260

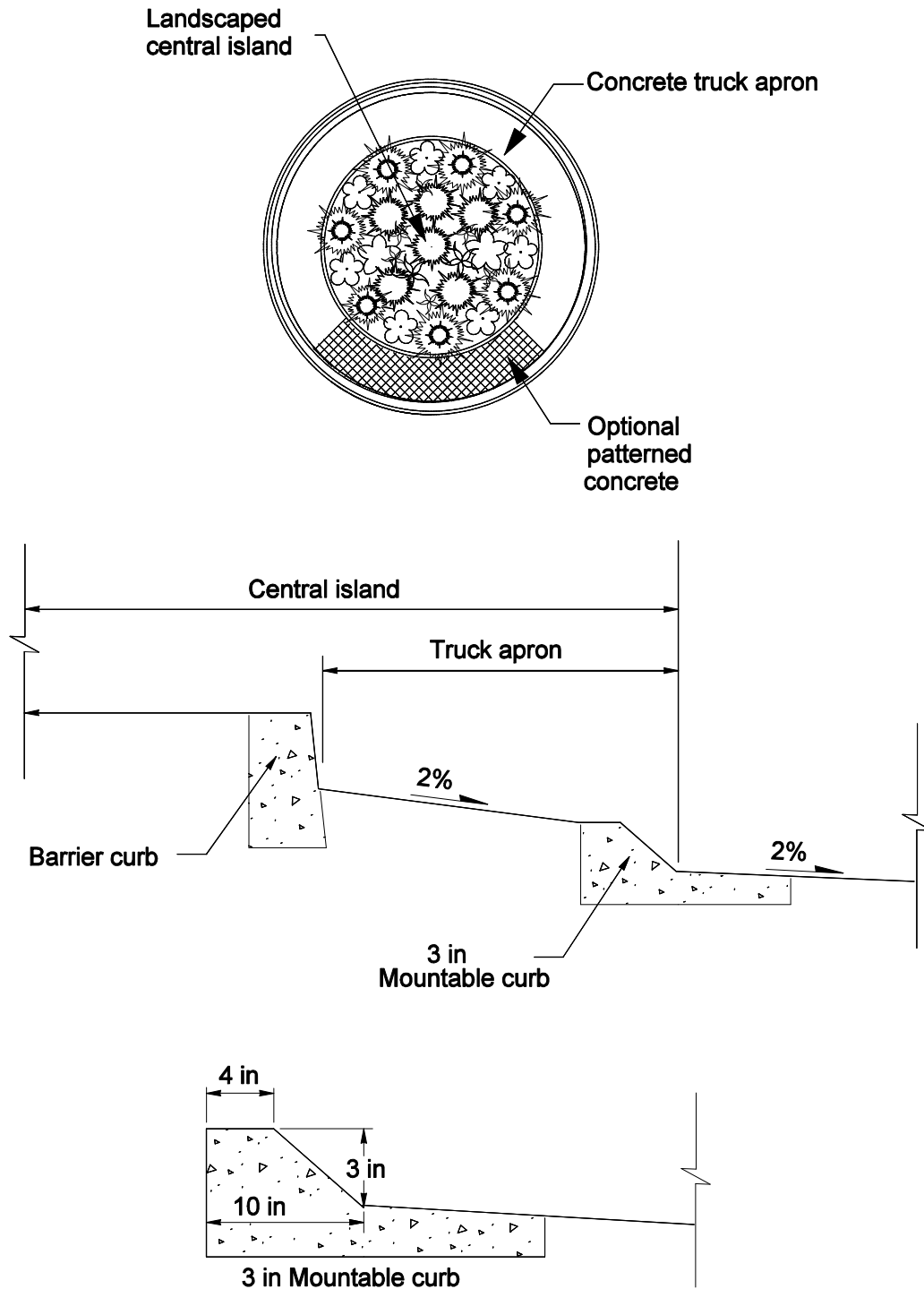
**Intersection Sight Distance Lengths (ft)**

Where:

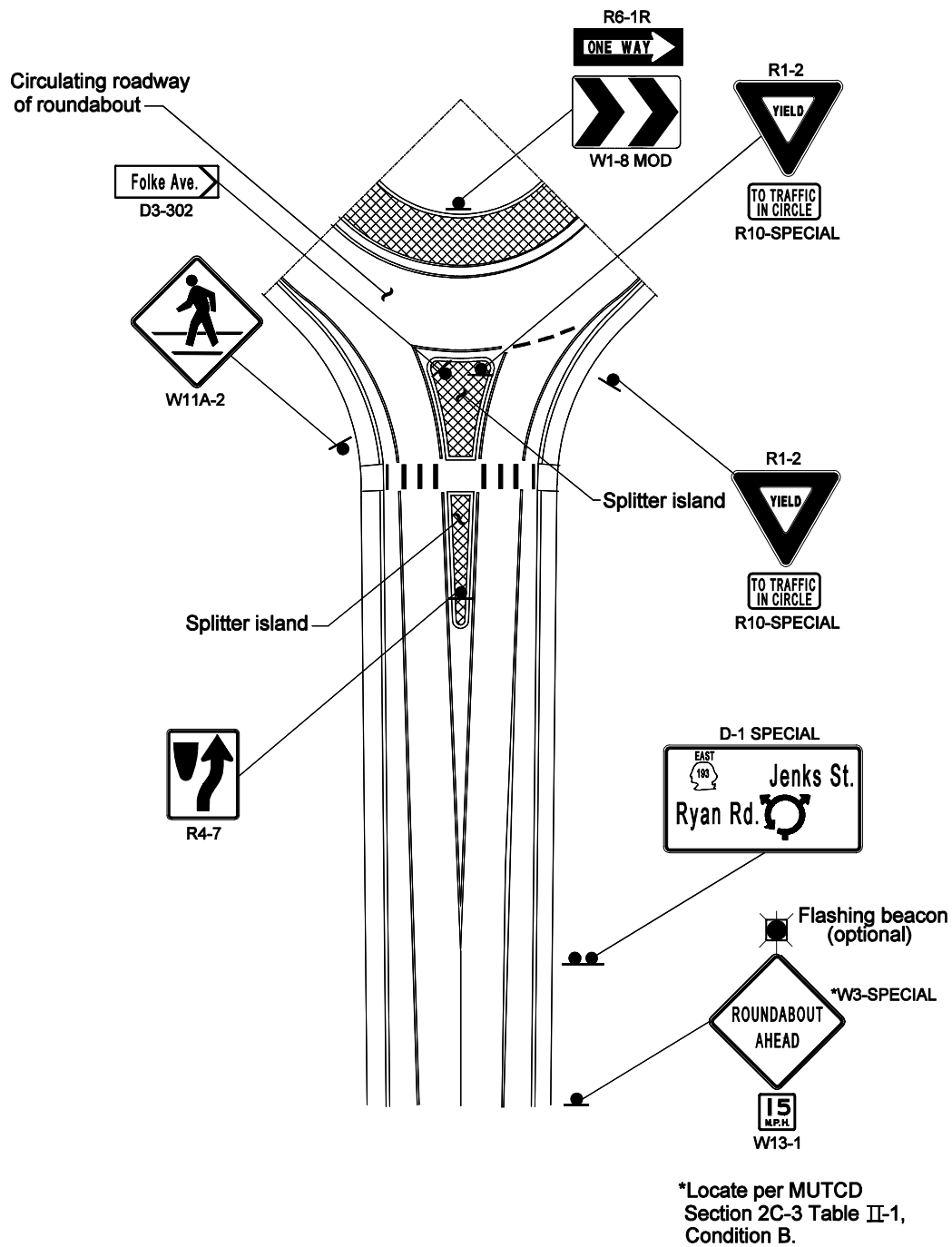
**L1a** = Sight distance, from the yield point, along approach to the left, distance L1 using the posted speed of the approach.

**L1b** = Sight distance, from the yield point, on circulating roadway, distance L1 using roundabout design speed.

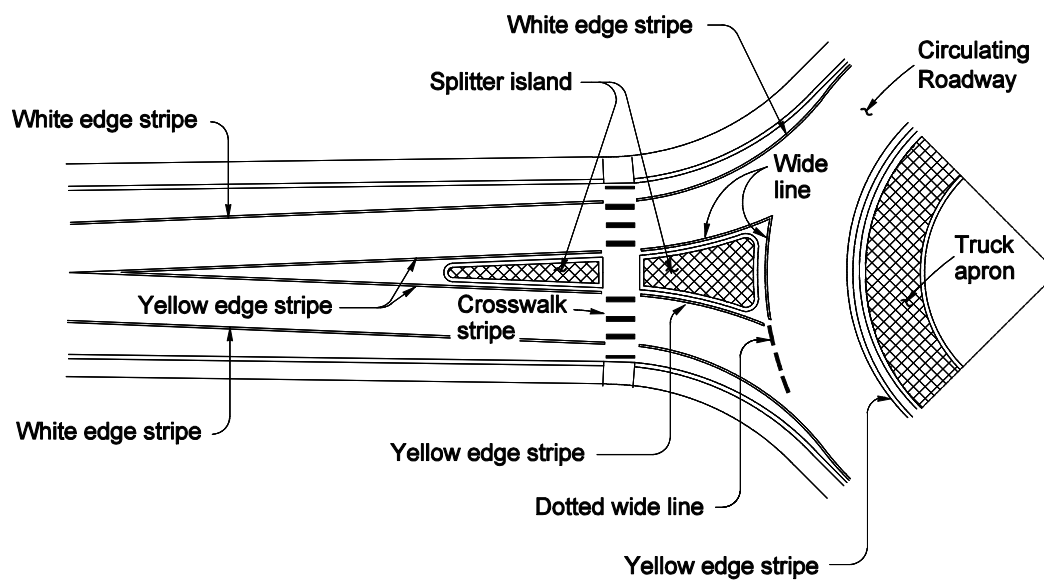
**Intersection Sight Distance  
Figure 915-6**



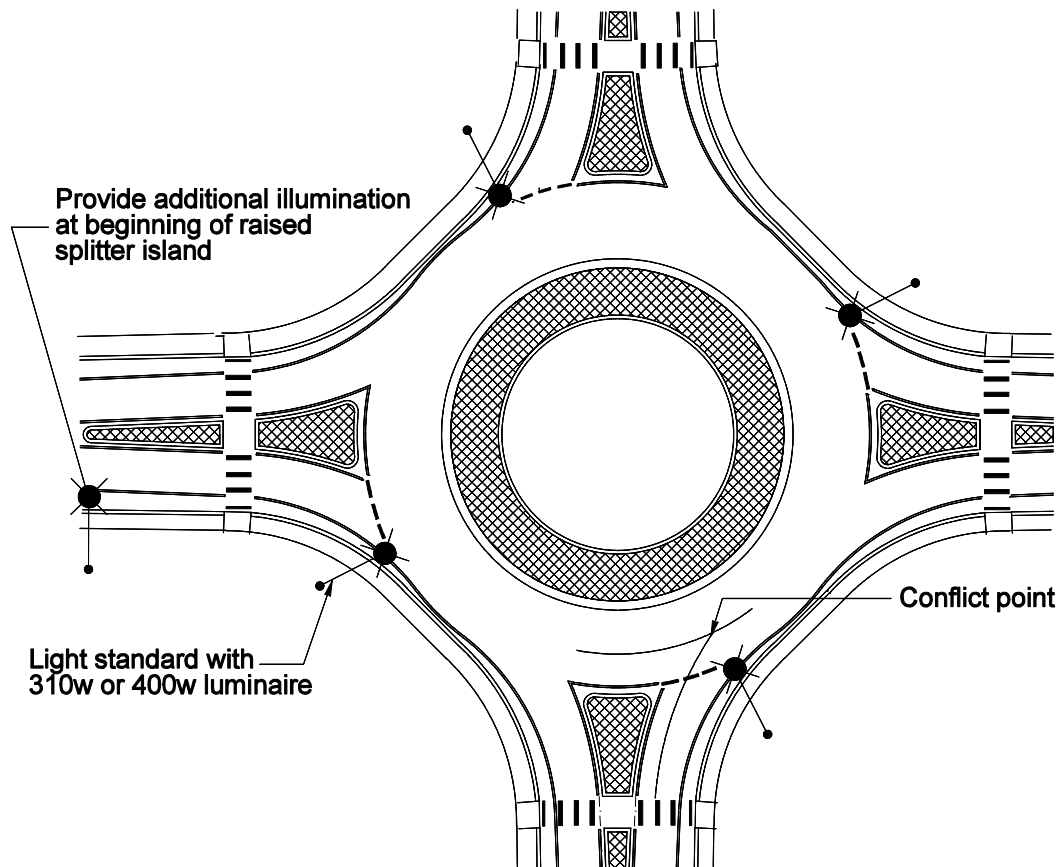
**Central Island  
Figure 915-7**



**Roundabout Signing  
Figure 915-8**



**Roundabout Pavement Marking  
Figure 915-9**



**Roundabout Illumination**  
**Figure 915-10**